FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

March 5 to March 11, 2017 (Week 10)

Overall Summary

- Overall, the decline in influenza activity in Canada has been slow compared to previous seasons. Many parts of Canada, particulary in the Eastern and Atlantic regions are still reporting elevated activity in week 10.
- Widespread or localized influenza activity was reported in 23 regions across six provinces.
- In week 10, laboratory detections, influenza-like illness and outbreaks from participating provinces and territories and sentinel networks decreased from the previous week.
- Influenza B activity in Canada is slowly increasing but remain below what has been observed in previous seasons.
- A(H3N2) continues to be the most common type of influenza affecting Canadians.
- The majority of laboratory detections, hospitalizations and deaths have been among adults aged 65+ years.
- For more information on the flu, see our Flu(influenza) web page.

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 10, three regions (one each in NB and NT and YK) reported no influenza or influenza-like illness activity. Sporadic influenza activity was reported in 27 regions across 11 provinces and territories. Localized activity was reported in 18 regions across six provinces. Widespread activity was reported in five regions (three in NL and two in QC). For more details on a specific region, click on the map.

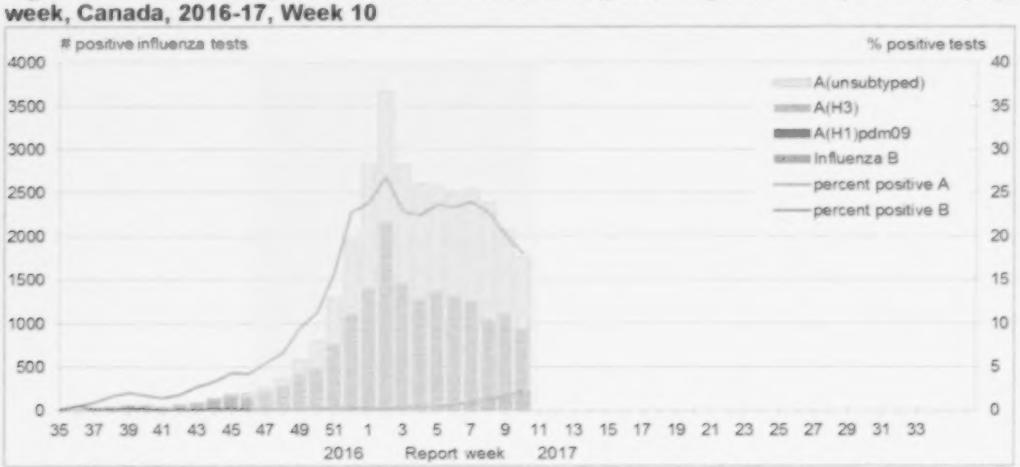
Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 10

Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

In week 10, the number of positive tests (1,726) and the percentage of tests positive for influenza (20%) decreased from the previous week. Peak influenza detections occurred in week 02 at 27%. After a decline from the peak in week 03, detections have remained relatively stable (ranging from 20% to 25% in weeks 03 to 10). Influenza A continues to account for the majority of detections; however, influenza B detections have been steadily increasing for the past few weeks. Influenza B activity is very low compared to the same time period in the previous two seasons. For data on other respiratory virus detections, see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada (PHAC) website.

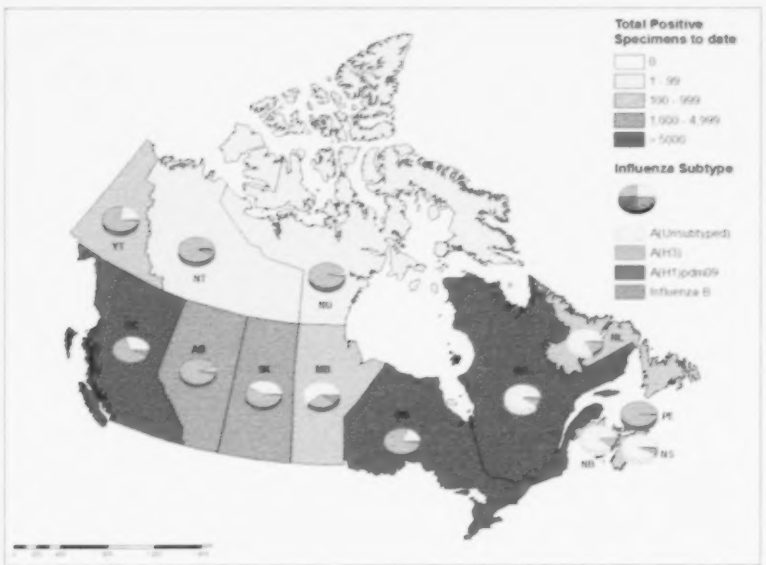
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2016-17, Week 10



The shaded area indicates weeks where the positivity rate was at least 5% and a minimum of 15 positive tests were observed, signalling the period of seasonal influenza activity.

To date, 31,617 laboratory confirmed influenza detections have been reported, of which 97% have been influenza A. Influenza A(H3N2) is the most common subtype detected. For more detailed weekly and cumulative influenza data, see the text descriptions for Figures 2 and 3 or the Respiratory Virus Detections in Canada Report.

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province/territory, Canada, 2016-17, Week 10



To date, detailed information on age and type/subtype has been received for 22,110 laboratory-confirmed influenza cases (Table 1). Among cases with reported age and type/subtype information, adults aged 65+ accounted for almost half of the reported influenza cases. Among cases of influenza A(H3N2), adults aged 65+ represented 49% of cases, followed by adults aged 20-64 (34% of cases). In the previous influenza A(H3N2)-predominant season in 2014-15, adults aged 65+ represented 58% of cases and adults aged 20-64 represented 27% of cases.

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2016-17, Week 10

Age groups (years)	Week (March 5 to March 11, 2017)					Cumulative (August 28, 2016 to March 11, 2017)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
0-4	83	0	11	72	8	1968	12	779	1177	89	2057	9%
5-19	>49	<5	5	44	19	2042	13	1028	1001	131	2173	10%
20-44	96	0	18	78	21	3147	26	1731	1390	130	3277	15%
45-64	>124	<5	15	109	31	3494	22	1845	1627	177	3671	17%
65+	407	0	49	358	30	10673	11	5086	5576	259	10932	49%
Total	761	<5	98	661	109	21324	84	10469	10771	786	22110	100%
Percentage[2]	87%	0%	13%	87%	13%	96%	0%	49%	51%	4%		

[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Cumulative data include updates to previous weeks.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped. The specimen was typed as influenza A, but no result for subtyping was available.
r: Supressed to prevent residual disclosure
Specimens from NT, YT, and NU are sent to reference laboratories in the provinces

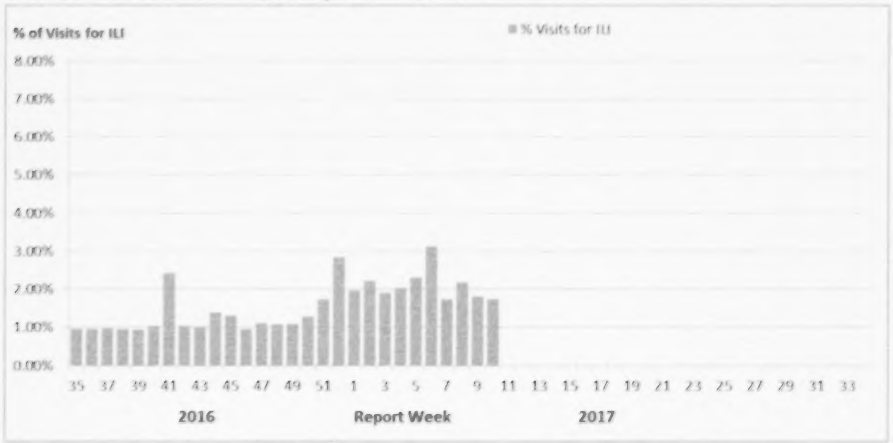
Syndromic/Influenza-like Illness Surveillance

Healthcare Professionals Sentinel Syndromic Surveillance

In week 10, 1.7% of visits to healthcare professionals were due to influenza-like illness, compared to 1.8% in the previous week.

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, 2016-17

Number of Sentinels Reporting Week 10: 121



Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

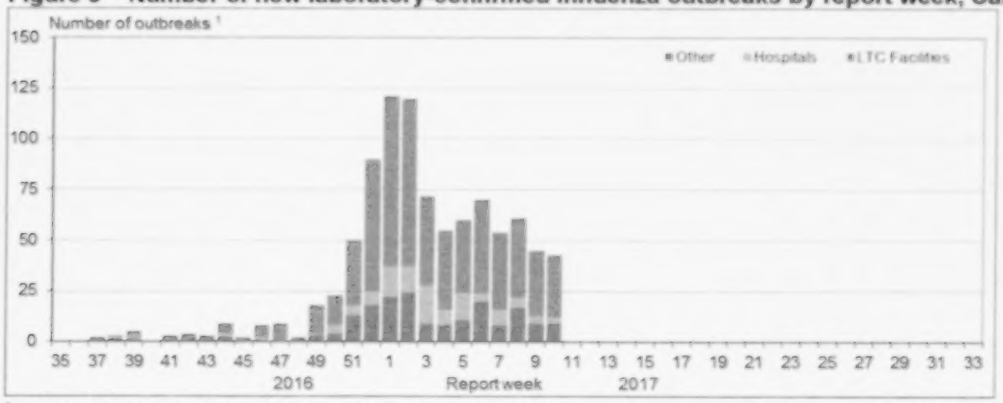
Are you a primary healthcare practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel? Please visit our Influenza Sentinel page for more details.

Influenza Outbreak Surveillance

In week 10, 43 laboratory confirmed influenza outbreaks were reported (two less than the previous week). Among the reported outbreaks: 31 were in long-term care (LTC) facilities, three in hospitals and nine in institutional or community (other) settings. Of the outbreaks with known strains or subtypes, eight were due to influenza A(H3N2), 20 were due to influenza A(UnS) and two outbreaks were due to influenza B. An additional outbreak due to ILI was reported in a school.

To date this season, 948 outbreaks have been reported and the majority (67%) have occurred in LTC facilities. Compared to the same period in the most recent previous A(H3N2) predominant season (2014-15), 1,487 outbreaks were reported, of which 74% occurred in LTC facilities.

Figure 5 – Number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2016-17, Week 10



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions.Outbreak definitions are included at the end of this report.

Provincial/Territorial Influenza Hospitalizations and Deaths

In week 10, 254 influenza-associated hospitalizations were reported by participating provinces and territories, up from 225 reported in the previous week*. Influenza A accounted for 92% of hospitalizations. The weekly percentage of hospitalizations due to influenza B has been steadily increasing for the past few weeks. The largest proportion of hospitalizations were among adults aged 65+ (65%). A total of five intensive care unit (ICU) admissions and 17 deaths were reported in week 10.

To date this season, 4,857 hospitalizations have been reported, of which 97% were due to influenza A. Among cases for which the subtype of influenza A was reported, almost all (2632/2645) were influenza A(H3N2). Adults 65+ accounted for 68% of the hospitalizations. A total of 179 ICU admissions and 230 deaths have been reported. The majority of deaths was reported in adults aged 65+ years.

Table 2 – Cumulative number of hospitalizations, ICU admissions and deaths by age and influenza type reported by participating provinces and territories, Canada, 2016-17, Week 10

Age Groups (years)	Cumulative (August 28, 2016 to March 11, 2017)						
	Hospitalizations			ICU Admissions		Deaths	
	Influenza A Total	Influenza B Total	Total [# (%)]	Influenza A and B Total	%	Influenza A and B Total	%
0-4	370	14	384 (8%)	10	6%	<5	x%
5-19	206	19	225 (5%)	12	7%	<5	x%
20-44	257	8	265 (5%)	17	9%	<5	x%
45-64	639	22	661 (14%)	48	27%	31	13%
65+	3251	71	3322 (68%)	92	51%	193	84%
Total	4723	134	4857 (100%)	179	100%	230	100%

x: Supressed to prevent residual disclosure

*Note: Influenza-associated hospitalizations are not reported to PHAC by BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. The hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

In week 10, 18 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. All but three cases were due to influenza A. The number of weekly hospitalizations reported since week 05 have been below the six year average for the same time period (Figure 7).

To date this season, 441 laboratory-confirmed influenza-associated pediatric hospitalizations were reported by the IMPACT network. Children aged 0-23 months accounted for approximately 39% of hospitalizations. Influenza A accounted for 92% (n=406) of the reported hospitalizations, of which 32% (n=142) were influenza A(H3N2) and the remainder were A(UnS). Additionally, 69 intensive care unit (ICU) admissions have been reported. Children aged 0-23 months accounted for 29% of ICU cases followed by children aged 10-16 (28%). A total of 46 ICU cases reported at least one underlying condition or comorbidity. Less than five deaths have been reported this season.

Figure 6 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, 2016-17, Week 10

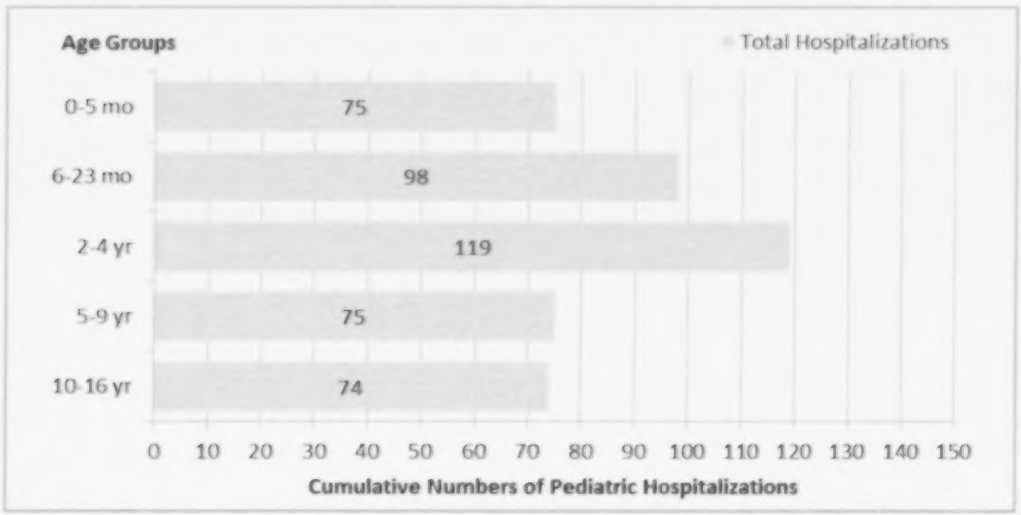
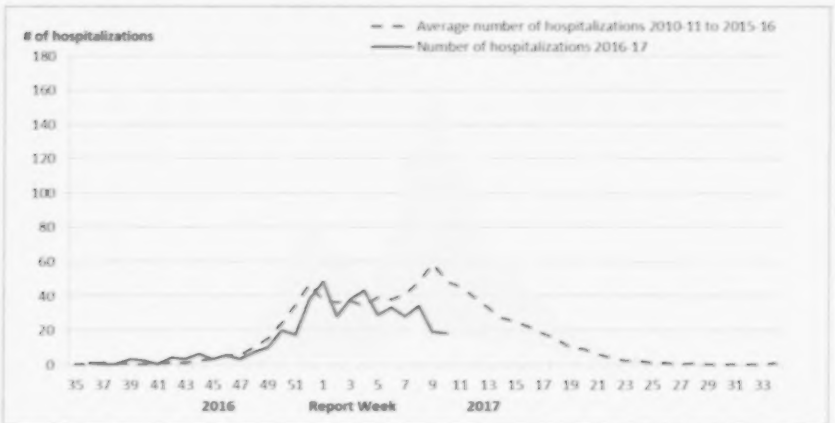


Figure 7 – Number of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, by week, Canada, 2016-17, Week 10



The shaded area represents the maximum and minimum number of cases reported by week from seasons 2010-11 to 2015-16

The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated pediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths

In week 10, 58 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations were reported by the Canadian Immunization Research Network (CIRN). All but four cases were due to influenza A and the majority of cases (81%) occurred in adults aged 65+.

To date this season, 1,170 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations have been reported by CIRN. Influenza A accounted for 98% of hospitalizations. Adults aged 65+ accounted for 78% of hospitalizations. To date, 70 intensive care unit (ICU) admissions have been reported. A total of 44 ICU cases reported at least one underlying condition or comorbidity. The median age of patients admitted to the ICU was 69 years. Approximately 49 deaths have been reported this season, the majority in adults aged 65+. The median age of reported deaths was 85 years.

Figure 8 - Cumulative numbers of adult hospitalizations (≥20 years of age) with influenza by type and age-group reported by CIRN, Canada, 2016-17, Week 10

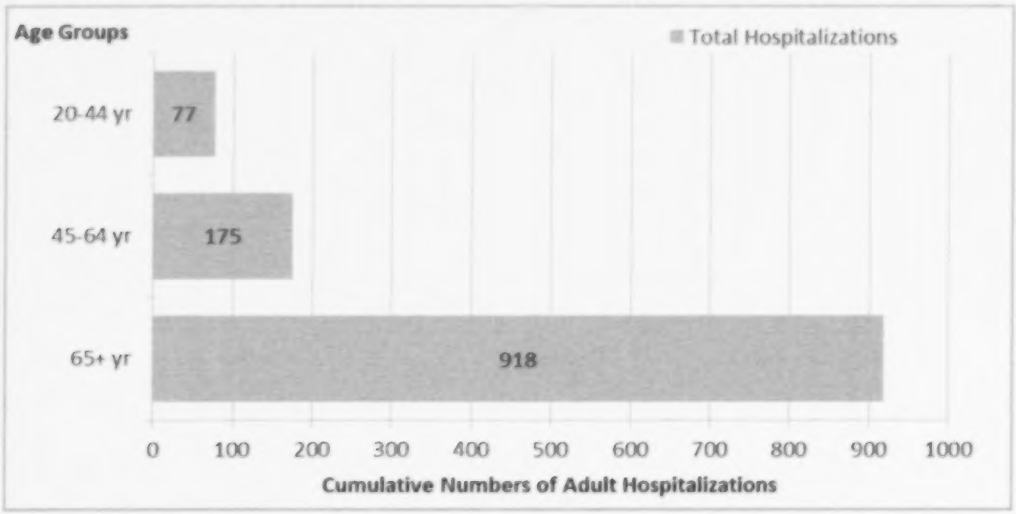
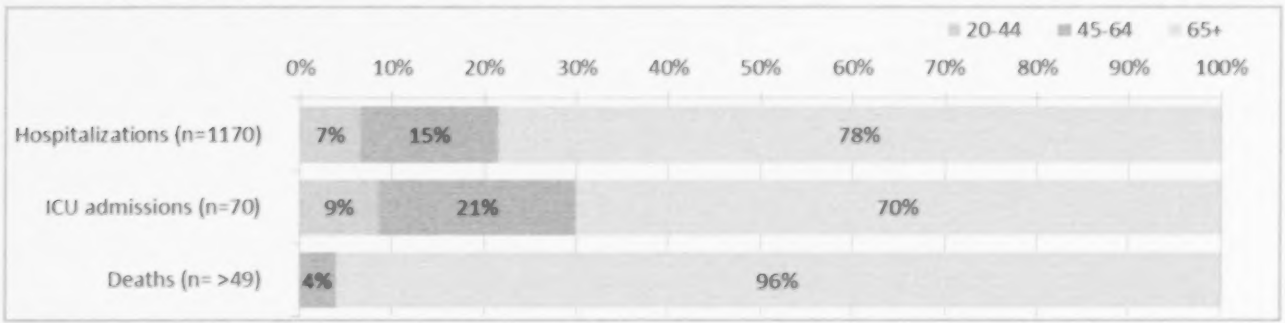


Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza by age-group (≥20 years of age) reported by CIRN, Canada 2016-17, Week 10



The number of hospitalizations reported through CIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Influenza Strain Characterizations

During the 2016-17 influenza season, the National Microbiology Laboratory (NML) has characterized 1,290 influenza viruses [1150 A(H3N2), 28 A(H1N1), 112 influenza B]. All but one influenza A virus (n=1177) and 40 influenza B viruses characterized were antigenically or genetically similar to the vaccine strains included in both the trivalent and quadrivalent vaccines. Seventy-two influenza B viruses were similar to the strain which is only included in the quadrivalent vaccine.

The World Health Organization (WHO) has released the recommended composition of the influenza vaccine for use in the 2017-2018 northern hemisphere influenza season. Trivalent vaccines are recommended to contain: 1) an A/Michigan/45/2015 (H1N1)pdm09-like virus; 2) an A/Hong Kong/4801/2014 (H3N2)-like virus; and 3) a B/Brisbane/60/2008-like virus (Victoria lineage). Quadrivalent vaccines are recommended to contain the above three viruses and a B/Phuket/3073/2013-like virus (Yamagata lineage).

Table 3 – Influenza strain characterizations, Canada, 2016-17, Week 10

Strain Characterization Results[1]	Count	Description
Influenza A (H3N2)		
Antigenically A/Hong Kong/4801/2014-like	314	Viruses antigenically similar to A/Hong Kong/4801/2014, the A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine.
Genetically[2] A/Hong Kong/4801/2014-like	835	Viruses belonging to genetic group 3C.2a. A/Hong Kong/4801/2014-like virus belongs to genetic group 3C.2a and is the influenza A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine. Additionally, genetic characterization of the 314 influenza A (H3N2) viruses that underwent HI testing determined that 266 viruses belonged to genetic group 3C.2a and 47 viruses belonged to genetic group 3C.3a. Sequencing is pending for the remaining one isolate. The majority of viruses belonging to genetic group 3C.3a are inhibited by antisera raised against A/Hong Kong/4801/2014[3].
Antigenically A/Indiana/10/2011-like[4]	1	Viruses antigenically similar to A/Indiana/10/2011, a candidate H3N2v vaccine virus.
Influenza A (H1N1)		
A/California/7/2009-like	28	Viruses antigenically similar to A/California/7/2009, the A(H1N1) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent influenza vaccine.
Influenza B		
B/Brisbane/60/2008-like (Victoria lineage)	40	Viruses antigenically similar to B/Brisbane/60/2008, the influenza B component of the 2016-17 Northern Hemisphere's **trivalent** and **quadrivalent** influenza vaccine.
B/Phuket/3073/2013-like (Yamagata lineage)	72	Viruses antigenically similar to B/Phuket/3073/2013, the additional influenza B component of the 2016-17 Northern Hemisphere **quadrivalent** influenza vaccine.

[1] The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Strain characterization data reflect the results of hemagglutination inhibition (HI) testing compared to the reference influenza strains recommended by WHO.
[2] Determined by sequence analysis
[3] WHO - Recommended composition of the influenza virus vaccines for use in the 2016-17 northern hemisphere influenza season
[4] Detected in epidemiological week 50. For more details, see Week 50 report

Antiviral Resistance

During the 2016-17 season, the National Microbiology Laboratory (NML) has tested 701 influenza viruses for resistance to oseltamivir and zanamivir and 176 influenza viruses for resistance to amantadine. All but one influenza A(H3N2) virus were sensitive to oseltamivir and all viruses were sensitive to zanamivir. All 176 influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2016-17, Week 10

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	600	1 (0.2%)	600	0 (0%)	153	153 (100%)
A (H3N2v)	1	0 (0%)	1	0 (0%)	1	1 (100%)
A (H1N1)	24	0 (0%)	23	0 (0%)	22	22 (100%)
B	76	0 (0%)	77	0 (0%)	NA[1]	NA[1]
TOTAL	701	1 (0.1%)	701	0 (0%)	176	176 (100%)

[1]NA: Not Applicable

Provincial and International Influenza Reports

- World Health Organization influenza update
- World Health Organization FluNet
- WHO Influenza at the human-animal interface
- Centers for Disease Control and Prevention seasonal influenza report
- European Centre for Disease Prevention and Control - epidemiological data
- South Africa Influenza surveillance report
- New Zealand Public Health Surveillance
- Australia Influenza Report
- Pan-American Health Organization Influenza Situation Report
- Alberta Health – Influenza Surveillance Report
- BC - Centre for Disease Control (BCCDC) - Influenza Surveillance
- New Brunswick – Influenza Surveillance Reports
- Newfoundland and Labrador – Surveillance and Disease Reports
- Nova Scotia - Flu Information
- Public Health Ontario – Ontario Respiratory Pathogen Bulletin
- Manitoba – Epidemiology and Surveillance – Influenza Reports
- Saskatchewan – influenza Reports
- PEI – Influenza Summary

FluWatch Definitions for the 2016-2017 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.
Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.
Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported
2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†
3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†
4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.
** More than just sporadic as determined by the provincial/territorial epidemiologist.*
† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.
This report is available on the Government of Canada Influenza webpage. Ce rapport est disponible dans les deux langues officielles.